

AMENDMENTS TO THE CLAIMS

A listing of all claims and their current status in accordance with 37 C.F.R. § 1.121(c) is provided below.

1. (previously presented) A process for olefin oligomerization in a reactor,
the process comprising:
providing a reaction mixture in the reactor, the reaction mixture comprising:
at least one reactant comprising at least one olefin monomer and optionally
hydrogen; and
a catalyst system suitable for the oligomerization of olefin monomers;
contacting the olefin monomer and the catalyst system in a reaction zone;
monitoring an olefin oligomerization reaction by using low-resolution
Raman spectrometry equipment to provide an output signal
representative of one or more chemical components of the reaction;
and
recovering an oligomer.
2. (previously presented) The olefin oligomerization process of claim 1,
wherein the output signal is representative of a concentration of one of the reactants or the
oligomer.

3. (previously presented) The olefin oligomerization process of claim 1, comprising adjusting the olefin oligomerization reaction in response to the output signal provided by the Raman spectrometry equipment.

4. (previously presented) The olefin oligomerization process of claim 1, wherein the olefin oligomerization reaction is adjusted by adjusting the amount within the reaction mixture of at least one of the reactants, the oligomer or the catalyst system.

5. (previously presented) The olefin oligomerization process of claim 1, wherein the Raman spectrometry equipment is operatively connected to a Raman fiber optic probe that is in contact with the olefin oligomerization reaction or the oligomer.

6. (cancelled).

7. (cancelled).

8. (previously presented) The olefin oligomerization process of claim 1, wherein the low resolution Raman spectrometry equipment has a resolution in the range of from about 15 wavenumbers to about 30 wavenumbers.

9. (previously presented) The olefin oligomerization process of claim 1, wherein the reactants comprise hydrogen.

10. (previously presented) The olefin oligomerization process of claim 1, wherein the oligomerization reaction is a trimerization reaction.

11. (previously presented) The olefin oligomerization process of claim 1, wherein the monomer comprises ethylene and the oligomer comprises 1 – hexene.

12. (previously presented) The olefin oligomerization process of claim 1, wherein the process is performed in two or more reactors connected in series, wherein effluent from an upstream reactor is provided as input to a downstream reactor, wherein the monitoring comprises determining a concentration of the monomer in the effluent by the Raman spectrometry equipment, and comprising adjusting an amount of monomer or comonomer fed to the downstream reactor.

13-29. (cancelled).

30. (previously presented) A trimerization process, the process comprising:
monitoring a trimerization reaction by using Raman spectrometry equipment,
wherein the Raman spectrometry equipment comprises low resolution
Raman spectrometry equipment; and
recovering 1-hexene from the trimerization reaction.

31. (previously presented) The trimerization process of claim 30, comprising adjusting a condition of the trimerization reaction in response to an output signal provided by the Raman spectrometry equipment.

32. (previously presented) The trimerization process of claim 31, wherein adjusting the trimerization reaction condition comprises adjusting an amount of an ethylene monomer, a catalyst system, or the 1-hexene, or any combination thereof, in response to the output signal.

33. (previously presented) The trimerization process of claim 30, wherein the Raman spectrometry equipment comprises a Raman fiber optic probe adapted to contact the trimerization reaction.

34. (cancelled).

35. (previously presented) The trimerization process of claim 30, wherein the low resolution Raman spectrometry equipment has a resolution in the range of from about 15 wavenumbers to about 30 wavenumbers.

36. (previously presented) The trimerization process of claim 30, wherein the trimerization reaction comprises ethylene monomer, a catalyst system, and hydrogen.

37. (previously presented) The trimerization process of claim 30, wherein the process is performed in two or more reactors connected in series, wherein effluent from an upstream reactor is provided as input to a downstream reactor, wherein the monitoring comprises determining a concentration of an ethylene monomer in the effluent by the Raman spectrometry equipment, and comprising providing an amount of the ethylene monomer in addition to the effluent to the downstream reactor in response to the determined concentration of the ethylene monomer in the effluent.

38. (cancelled).

39. (cancelled).